WARRANTY

Media Logic of New York, Inc. warrants this product against defects in material or workmanship for a period of 12 months from the date of purchase. Media Logic will replace or repair, at its option, any unit that within the warranty period is found by Media Logic to be defective in proper usage.

This warranty does not cover any damage due to accident, misuse, abuse or negligence. Under no circumstances will Media Logic of New York, Inc. be liable for any incidental or consequential damages.

Speed Check 102

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Theory of Operation

The Speed Check 102 has a series of 6 Light Emitting Diodes (LEDs) which light in sequence at the selected frame rate. If the Speed Check 102 is set at the same speed as the camera you are testing, each time a frame of film passes the gate, the SC102 will have cycled through six LEDs. Since the mirror shutter of motion picture cameras alternately diverts the image to the film and viewfinder, only half of the LEDs will be visible to the operator when the camera is running. If the camera and SC102 are running at slightly different speeds you will notice the LEDs apparently drifting to the left or right.

Strobe Version: The strobe version of the SC102 has only one superbright LED which acts as a timing light. This LED flashes at the frame rate selected and acts to freeze the motion of the sprocket wheel or camera pulldown claw. This version can be used to test the speed of cameras, dubbers, editing tables, and projectors.

The Controls

The front panel contains all of the controls for the SC102 and are pretty self explanatory. The ON-OFF switch turns the SC102 on and off. The 3 position switch in the middle is used to select special speeds. The upper position selects 23.976 fps, the lower position selects 29.970 fps, and in the middle position the SC102 will run at the rate selected on the 2 digit pushwheel to the right. **Note: When the pushwheel is set to "00", the frame rate is 100 fps.** The unit is powered by a single 9 V alkaline battery.

Camera Testing

Testing a camera is easy and quick. First, determine what speed the camera is set on, then set the SC102 to that speed. With both the SC102 and the camera running, focus the camera on the SC102 and look through the viewfinder. You should notice only three stationary LEDs. Any significant speed variation will be noticeable within 20-30 seconds

as the display drifts to the left or right. You can easily see what a 1 FPS variation looks like by setting the camera to 24 fps and the SC102 to 25 fps.

Strobe Version: With a Strobe Version of the SC102, aim the LED light on a sprocket wheel or on the camera claw. The Strobe will freeze the motion of the wheel or claw. If the sprockets drift, there is some speed difference between the camera and the SC102.

Non-Reflex Cameras

You can also test cameras without mirror shutters by viewing the SC102 directly through the gate with the lens removed. You may need a small inspection mirror to see through the gate of some cameras. Of course this test cannot be done while the camera is loaded with film. The Strobe Version of the SC102 is better suited for testing these cameras because you can strobe the claw or sprockets directly.

Interpreting Results

Every frame of film is represented by 6 LEDs on the SC102, therefore each time one LED drifts by on the display we are out of synch by 1/6 of a frame. Crystal synch cameras need to be accurate to about 20 parts per million (ppm) which is 0.002%. This translates to an accuracy of about 1/2 frame in 20 minutes. The SC102 is also accurate to within 20ppm, so under worst case conditions where the camera is, say, fast by 20ppm and the SC102 is slow by the same amount, you will notice an *apparent* inaccuracy of 1 frame in 20 minutes. When testing a camera under these conditions, you will see the display shift one LED every 3 minutes 20 seconds. Under normal shooting circumstance each take is much less than 20 minutes so testing for 20-30 seconds is usually adequate.

The difference you will notice between 29.97 fps and 30 fps is about 3 LEDs drifting every 20 seconds.

(over)

If the LEDs drift to the right, the camera is running too slow, and if the LEDs drift left, the camera is fast.

Troubleshooting

If you notice fewer or more than 3 LEDs:

The number of LEDs you see through the camera is a function of the camera's shutter opening. Cameras with shutters less than 180° will usually have larger mirror surfaces and you may see 3 1/2 or 4 LEDs through the viewfinder. The number of LEDs visible is not important, as long as they do not drift right or left.

If you notice an unacceptable speed variation in your camera here's what to do:

1. Double check the settings on the SC102 and on the camera. If there is an external speed control attached to the camera, disconnect it and make sure the camera is set to the speed you would like. Compare the speed with and without an external speed control. If the speed variation disappears when the speed control is disconnected, the speed control is the culprit and visa-versa.

2. Make sure there are fresh batteries in both the SC102 and the camera.

3. Temperature extremes often affect the accuracy of cameras as well as the SC102. Make sure the ambient temperature is between 0° C and 70° C. When shooting in extremes, keep the SC102 within these temperature limits if you plan to use it.

4. Extreme electromagnetic or rf radiation can affect the electronics in cameras and in the SC102. Stay away from powerful transmitters, microwave dishes and electromagnetic sources when testing.

5. If you can, test another camera on the SC102 to verify it is working properly. This will eliminate the SC102 as the source of the problem.